

REMARKS

This is in response to the decision of the Board of Patent Appeals and Interferences, dated December 23, 2004. Claims 1-19 have been canceled. Claims 20-24 are pending.

Claim 20 has been amended to clarify that the first conductive material that fills in the contact hole in the first insulating layer and the second conductive material that fills in the contact hole in the second insulating layer are solid-state-bonded to each other so as to directly contact one another in a bonded state with no intermediate element therebetween. The BPAI on page 8 of its opinion, 3-4 lines from the bottom, stated that the claims could have been drafted in this form to define over the cited art.

For example, see Fig. 4 of the instant application which illustrates that the conductive material 5 in contact hole 13 of insulating layer 7 is solid-state-bonded to and directly contacts the conductive material 25 provided in through hole 28 of the other insulating layer 27. Moreover, Figs. 3-4 of the instant application illustrate that the conductive materials 5 and 25 each protrude above their corresponding insulating layers 7 and 27, respectively. Kawai fails to disclose or suggest the aforesaid quoted and underlined aspects of claim 20. Kawai in Fig. 12(c) illustrates insulating films 1 having holes 4 defined therein which are filled with copper (Cu). Moreover, tin (Sn) bonding members 5 and metal wirings 2 are provided between the insulating films. Kawai's requirement of tin bonding members 5 and metal wirings 2 means that in Kawai the Cu material which fills opposed through holes 4 in Kawai is not directly bonded to each other and thus is in non-contacting relation. In other words, in direct contrast with the requirement of claim 20, in Kawai the conductive materials in different holes 4 are not in direct contact with one another. Bonding members 5 and metal wirings 2 prevent such conductive materials in holes 4

from directly contacting one another in Kawai – teaching directly away from the invention of claim 20. Kawai is entirely unrelated to the invention of claim 20.

Furthermore, Fig. 12(c) of Kawai also fails to disclose or suggest the requirement of claim 20 of a first conductive material filling in the contact hole in the first insulating layer and protruding above a surface of the first insulating layer. In Fig. 12(c) of Kawai, Cu in a hole 4 is not "protruding above" a surface of a corresponding insulating layer 1. Instead, the top surface of Cu material in a hole 4 is flush with the top surface of insulating layer 1. Moreover, it cannot be said that Sn bonding members 5 meet this aspect of claim 20, because Sn bonding members 5 are not the material filling a contact hole as required by claim 20 (Sn and Cu are clearly different materials). Again, Kawai is entirely unrelated to the invention of claim 20 in this respect.

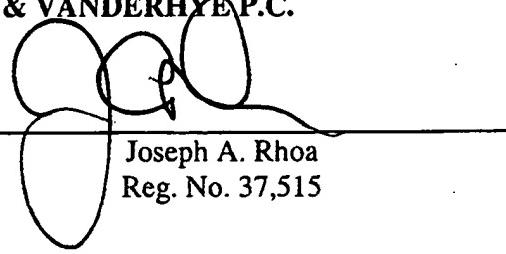
Since Kawai fails to disclose or suggest each of the two aspects of claim 20 discussed above, it is respectfully submitted that claim 20 is in condition for allowance.

If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:



Joseph A. Rhoa
Reg. No. 37,515

JAR:caj
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100